

Members' events: Sept-Nov 2011

Friday Evening Discourse Prosperity through chemistry

Friday 30 September 8.00pm – 9.15pm

Chemistry has been at the heart of research at the Ri for 200 years! After all, it is the great enabling subject that is central to progress in solving global problems. In today's world, these problems are as vital as new energy sources, food, clean water, and healthcare. **Prof David Phillips** presents some current research in these areas as well as his own work in the field of targeted photodynamic therapy of cancer.

Tickets: Free to Full and Faraday Members/£10 Associate Members/£15 guests

Members' masterclass: Things in motion

Tuesday 25 October

Session one: 10.30am – 12.30pm

Session two: 2.00pm – 4.00pm

This year we celebrate the 30th anniversary of Ri mathematics masterclasses. Members are invited to join in a masterclass by **Prof Alan Davies** based on the original mechanics classes presented by Prof John Crank in the very first series in 1981.

Alan will present kinematics, developing the ideas of distance, velocity and acceleration together with the relationships between them. He will introduce the concept of force and the parallelogram law for equilibrium and explain Newton's laws of motion and their relationship with two other important laws: conservation of energy and conservation of momentum.

Suitable for anyone aged 8 and above. Children under the age of 13 must be accompanied by an adult.

Tickets: Free to Full and Faraday Members/£5 Associate Members/£8 guests

Genes in a bottle @ the LYSC

Thursday 27 October 10.30am – 12.30pm

Mr Crick walked into a Cambridge pub with Dr Watson to celebrate the fact that they had unravelled the structure of DNA, saying: "we have discovered the secret of life!"

Your DNA is the amazing, self replicating code that makes you who you are. In this workshop you will get to extract DNA from your own cells and capture your own genetic code in a bottle for you to keep.

Discover what the L'Oreal Young Scientist Centre offers to curious young minds across the country.

Suitable for anyone aged 9 and above. Children under the age of 11 must be accompanied by an adult. Please note ticket sales go towards the costs of the consumables used.

Tickets: £10 Full and Faraday Members/£12 Associate Members/£15 guests

Friday Evening Discourse

How to make and repair muscles

Friday 28 October 8.00pm – 9.15pm

Skeletal muscles allow us to move, breathe, smile and look around. They are first made in the embryo in response to signals which tell naïve cells to be muscle rather than skin or bone.

Prof Peter Rigby, Chief Executive of the Institute for Cancer Research, will explore how the stem cells which govern muscle growth and repair are made in the embryo, activated in adults and may even be able to be used to repair damaged muscles.

Tickets: Free to Full and Faraday Members/£10 Associate Members/£15 guests

Friday Evening Discourse

The science and politics of climate change

Friday 25 November 8.00pm – 9.15pm

Sir David King, Director of the Smith School of Enterprise and Environment at the University of Oxford and former Chief Scientific Adviser and Head of the Government Office of Science, will present his expert perspective on the challenges climate change poses to both science and politics.

Tickets: Free to Full and Faraday Members/£10 Associate Members/£15 guests

Congratulations

Dr Geoff Smith, a senior lecturer in the Department of Mathematical Sciences at the University of Bath, was awarded an MBE in the Queen's Birthday Honours on 11 June 2011. The honour was recognition of Dr Smith's work in organising Royal Institution Mathematics Masterclasses in Bath over the past 20 years.

The success of the Maths Masterclasses is thanks to a network of dedicated volunteers, like Dr Smith, who work across the UK to deliver the interactive extracurricular sessions for young people.

We are also delighted to congratulate **Dr John Bond**, a Fellow in the Department of Chemistry at the University of Leicester and Member of the Royal Institution. Dr Bond was awarded an OBE for his contribution to forensic science and the police.

Dr Bond has received global acclaim as a pioneering forensic scientist. His development in fingerprint technology, which allows police to retrieve fingerprints from bullet cases, was voted one of the top 50 inventions of the year by Time Magazine in 2008 and 'one of the inventions most likely to change the world' by BBC Focus Magazine in 2009.

The Ri's Third Century

With the government's announcement earlier this year of an additional inheritance tax relief, it is now more valuable to leave a bequest to charity in your Will. Read more about how you can leave a legacy to the Royal Institution at www.rigb.org or contact the Membership office on 020 7670 2919/membership@ri.ac.uk.

Time & Space now have an exclusive table reserved for Members for lunch, Monday to Friday. A special set menu will also be available for Members on Discourse evenings. Book at 020 7670 2970.



Ri The Royal Institution
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CURIOUS minds

Meet your brain... meet Prof Bruce Hood

2011 Ri Christmas Lecturer announced

Inside each and every one of us is the most marvellous structure in the known universe – the human brain. Our brain makes us who we are and yet the way it works has been a mystery for much of human civilisation. We all know that we think but not how we think. Deep inside every brain is a vast hidden world of complexity that defies description. Yet science has made important discoveries in recent years that begin to uncover the workings of this remarkable organ.

The 2011 Ri Christmas lecturer, experimental psychologist, Prof Bruce Hood is fascinated by the weird and the wonderful sides of the human condition. As the current Director of the Bristol Cognitive Development Centre at the University of Bristol, he writes: 'I am truly thrilled to be asked to present the 2011 Royal Institution Christmas Lectures. I am honoured to follow in the very large footsteps left by all the great scientists who have made this event part of this nation's Christmas tradition.'

The three-part series will be broadcast on the BBC during the Christmas period and promise to be as interactive as ever. Audience participation will be unavoidable as Bruce tests your reactions, your thoughts and feelings to a range of illusions, mind expanding experiments and some very revealing demonstrations, as Bruce discovers the inner workings of your mind.



(rigb-science)



(Royal Institution)

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Opening times

Royal Institution open
9.00am – 6.00pm
Monday to Friday

Time & Space open
8.30am – 11.00pm
Monday to Friday

Registered Charity No. 227938



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Do we have your email address? We'd like to be able to contact you by email in future to save paper.

If we don't already have your details, please email membership@ri.ac.uk

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To find out how your organisation can support the Royal Institution, please contact the Development Department on +44 (0) 20 7409 2992 or follow the links on our website: www.rigb.org.

Be part of history, secure your place at the filming of the 2011 Ri Christmas Lectures



Be part of a famous Christmas tradition. Ri Members and school groups have the exclusive opportunity to purchase tickets for the filming of the three part series due to be broadcast on the BBC during the Christmas period.



This year we are launching a new balloting process, rather like the Wimbledon ticketing system, which aims to give all Ri Members a greater and fairer chance of securing tickets. Details about the booking process are enclosed, or you can visit www.rigb.org/christmaslectures2011 for more details.

The ballot will open on **Monday 5 September for 2 weeks, closing at midnight on Sunday 18 September.**

Ticket categories and prices

Theatre tickets

Adults must be accompanied by one or more juniors. Children under 11 will not be admitted and proof of age may be requested.

Junior 11 – 17: £20

Adults: £30

Library tickets (live transmission from the theatre)

Library tickets are to view, in cinema style, the filming of the lectures on a live transmission. These tickets will be on sale through the Ri website following the ballot process.

These tickets are not subject to the same restrictions as the theatre tickets (ie. children of any age may attend and adults need not be accompanied by a Junior ticket holder).

Junior (under 3 free): £5

Adults: £10

Ri Christmas Lectures 2011 Meet Your Brain

Professor Bruce Hood

Lecture 1: What's in your head?

Monday 12 December 2011, 6.00pm

What's inside your head? Your brain may look like a big walnut, but it has the ability to create an almost unlimited stream of images, thoughts, memories and dreams. Undoubtedly the most complex material in the universe, and yet it's just a collection of simple cells. Join us as we get under your skull and take a peek inside. What do brainwaves look like? How fast is a neuron? Why does your brain create its own version of reality? Bruce will use technology to measure brain activity and follow eye movement, build a virtual brain out of audience volunteers and play some guessing games with your mind. In the process, he'll show how everything you perceive is just an interpretation of the nerve impulses that your brain receives - which isn't really that much. Ultimately, we are all experts at filling in the blanks.

Lecture 2: Who's in charge here anyway?

Thursday 15 December 2011, 6.00pm

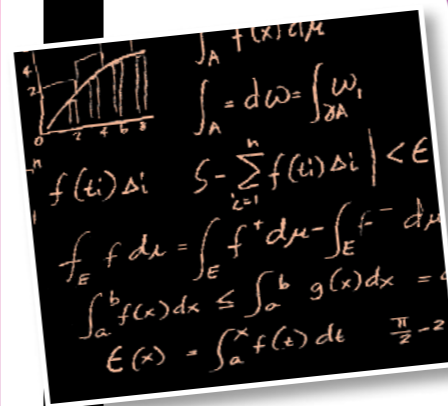
Who's in control - you or your brain? Your conscious thoughts are only the tip of the iceberg when it comes to all the activity going on inside your head. Every minute your brain is bombarded with information - sights, sounds, smells, feelings - and you are aware of only a tiny fraction of it. How does your brain decide what to trust and what to ignore, all without you even knowing? What sneaky shortcuts does it take to speed up your mental ability? Why is multi-tasking so dangerous? Using some surprising illusions and lots of audience participation, Bruce will make you say the wrong thing and fail to see what's right in front of you. Can you really believe your eyes? Possibly not!

Lecture 3: Are you thinking what I'm thinking?

Saturday 17 December 2011, 6.00pm

Have you ever seen a face in a piece of burnt toast? Why are our brains so obsessed with people-patterns? It's not just other humans either, your brain likes to give a personality to anything that shows a hint of character; whether it's your teddy bear, your pet fish or even your car. Yet there are elements of being human that prove virtually impossible to recreate artificially. Can a robot ever fall in love? With sensors to measure our response to some revealing live demonstrations, Bruce looks at what makes the human brain so special and how it is built to read other people's minds. Why do you feel pain when somebody else gets hurt? What attracts you to another person? Are your eyes a window to your soul? Join us to discover what makes you truly human.

New club unites the science and finance communities



We're coaxing finance professions back to their science and maths roots with a new science club at our Mayfair home. The 14-10 Club, will be formally launched on 6 October 2011 by club Patrons; David Harding, founder of Winton Capital Management hedge fund and Alex Lipton, MD and co-Head of the Global Analytics Group, Bank of America Merrill Lynch and Visiting Professor of Mathematics, Imperial College London.

Both patrons come from a physics background and employ a large number of scientist and mathematicians in their organizations. David Harding commented 'I am very pleased to be supporting the 14-10 Club. At Winton Capital, we fund a great deal of mathematical research and we are committed to strengthening the relationship between the science and finance communities.' Alex Lipton commented 'Science and maths are now at the heart of the financial sector. The type of work we do, building

quantitative models and strategies, means that those entering financial careers no longer see themselves as leaving science behind, but as applying it in a different context.'

The Club, taking its name from the outstanding achievement of the Ri – the discovery of 10 chemical elements, and the 14 Nobel Prizes which were won by scientists who worked in the Ri laboratories – will meet on a monthly basis to hear from top experts in science, maths and finance. Future speakers include: cosmologist, Professor John Barrow (Cambridge University); theoretical ecologist and past Government Chief Scientific Advisor, Lord Robert May (Oxford University); head quant at Barclays Capital and Risk magazine 'Quant of the Year 2011', Vladimir Piterbarg and Nobel laureate and behavioural economist, Professor Daniel Kahneman (Princeton University). Members will be part of a social and professional network of peers with a shared interest in science, maths and finance.

The club is open to both Ri members and non-members who work in the financial sector and have an interest in science and maths. Annual membership costs £350, but a monthly trial membership of £35 is also available for those wishing to try it out. Further information on the programme and applications process can be found online at www.rigb.org/14-10club.

Summer Celebrations of Mathematics at the Ri

1200 students descended on the Ri from across the UK, during a 3 day maths festival celebrating the 30th Anniversary of Ri Mathematics Masterclasses.

The students, who had already participated in a six-part masterclass series in their home county, relished the opportunity to tackle a feast of geometrical curiosities such as spinning mirrors, the secrets of perspective and the geometry of donuts with the Ri's Clothworkers' Fellow in Mathematics, Dr Sara Santos. The session is based on the 1981 inaugural masterclass by the programme's founder, famous maths communicator, Prof Sir Christopher Zeeman, entitled *Geometry and Perspective*.

Year 9 students were entertained by Dr James Grime of the Millennium Mathematics Project looking at the history of numbers, exploring their ancient mathematical meaning, whilst sixth formers investigated the new hot topic in science and maths – 'networks' – with former Ri Christmas Lecturer and science writer, Prof Ian Stewart.

The students also took part in the masterclass *Things in Motion* with Prof Alan Davies. The session, itself a re-make of one of the 1981 masterclass programme by Prof John Crank, uses a series of simple mechanics demonstrations and learning examples such as the maths behind the speed to show how fast superman would need to jump to clear the Empire State Building.

The festival was kicked off earlier in the month by Prof Zeeman at a conference for masterclass organisers. Of the programme that has reached over 50 000 students across the UK in the past 30 years, Prof Zeeman said: "I always felt that young people can understand

theorems and proofs much more than people expect. Maths is often reduced to a rather simple approach which is why I love communicating topics that can show children the real and interesting heart of mathematics. I am delighted to see that the programme I began 30 years ago is still alive and strong at the Royal Institution."



Science Short Courses launch with a sell out!

The first of the new science short courses launched at the end of June with a sold out series! Dr Eram Rizvi, a researcher at Queen Mary University of London, gave the first of six sessions providing an overview of particle physics: from Rutherford and the discovery of the nucleus, to cutting edge research at the Large Hadron Collider.

Science short courses are a brand new Ri programme, giving participants the opportunity to get a more in-depth view of a subject and access to expert tutors, compared to a one-off lecture, without the commitment of a full university course. Following the success of our pilot course, we will be offering an evening course on a history of Christianity and science, presented by Prof Frank James. Ri members can attend all six sessions for £180 (regular price £200). For more details, and to book your place, please see www.rigb.org.

